

Montana Fish and Game Department  
Fisheries Department

RESEARCH SUMMARY

1. Title and Study area 3

The survey of cutthroat and Dolly Varden trout in the Flathead River and tributaries above Kerr Dam.

The upper Flathead River drainage above Flathead Lake, the main Flathead River, three major tributary streams (North, South and Middle Forks) and numerous small tributaries covering a drainage area of 4,000 square miles. These waters empty into the 120,320 surface acres of Flathead Lake.

2. Purpose of the study.

Cutthroat trout historically were abundant in most of the streams of Montana. With the advent of more people, industry, etc., water habitat was drastically changed. All these changes have had a marked effect on the fishery complex of the entire state.

Early fisheries workers recognized that native fish were present in the waters of the state, but with a practically unlimited supply of exotic fish (rainbow, brook and brown trout) made available by the federal government, little concern was given to the propagation and management of the native species. Since that time, these exotic fishes have been introduced into almost all waters of Montana and nearly all waters suitable for trout in the entire United States.

The upper Flathead River drainage was subjected to plants of brook, rainbow and Yellowstone cutthroat trout and they have failed to survive. However, in spite of this unnatural competition, native species continue to survive, reproduce and provide a fishery that is unique to North America. In 1952, fish management workers, acting on the approval of the Fish and Game Commission, initiated the management of the upper Flathead River drainage with the native species.

3. Statement of the objectives.

The primary objective of this study would be to establish the basic life history information on the native West Slope cutthroat trout and Dolly Varden. This information would supply the background for sound management recommendations for a continuing fishery of these fish in the upper Flathead River drainage.

Since this study involves the largest freshwater lake west of the Mississippi River and the inter-related fishery of the upper tributaries, it would seem imperative that a maximum effort be made to understand and conserve this valuable resource.

Incidental to the primary objective, efforts should be made to study the competition between native and introduced species of fish present in the waters; the effect of Hungry Horse Dam, that blocked the normal spawning runs of native species in the South Fork of the Flathead River (the results of this study will lead us to recommendations that would alleviate adverse conditions caused by high dams); the extent and effect of the various types of pollution that exist in the

Flathead, Whitefish and Stillwater Rivers; and finally a study of the problems of rearing a domestic stock of west slope cutthroat trout.

4. a. Name of the person assigned to the project.

1953 - 1954 Daniel Block (Graduate thesis - Montana State University)  
 1955 - 1958 Frank A. Stefanich  
 1959 - 1960 Howard E. Johnson ( Graduate thesis - Montana State College)  
 1961 - 1962 Delano A. Hanzel

b. Supervisor and coordinator.

1953 - 1956 Frank A. Stefanich; Charles K. Phenicie  
 1957 - 1959 Frank A. Stefanich; George D. Holton  
 1959 - 1962 Boyd R. Opheim; George D. Holton

c. List of cooperating agencies (State and Federal).

In 1957 some assistance was given by the branch of Columbia River Basin Studies of the Fish and Wildlife Service.

5. a. Date of inception.

May 1953

b. Anticipated date of completion.

Everything according to plan - May 1969

Tagging phase - May 1966

Environmental phase - May 1967  
 (Water quality - temperatures - dams - pollution - etc.)

Flathead Lake phase - May 1969

Life History phase - May 1969

Hatchery phase - May 1967

6. a. Cost of project.

\$61,000.00 10 years

b. Annual cost if for more than one year.

\$6,100.00 average per year

c. Estimated cost of the total project.

\$160,000.00

7. Yearly progress report of progress to date and annual cost to date

F-7-R-3 1953. \$6,000.00

A systematic creel census was conducted on the North Fork of the Flathead River for the purpose of determining the relative fishing success of bank and boat fishermen. A total of 1,375 fishermen were checked, with bank fishermen representing 87 percent of the total fishing pressure and caught 70 percent of the fish. Cutthroat trout made up the majority of fish collected (83 percent) with the rest made up of Dolly Varden and mountain whitefish. The study pointed out the need for basic information on the life histories of the Dolly Varden and cutthroat trout and the interrelated fishery which exists between the forks of the Flathead River and Flathead Lake.

F-7-R-4 1954 \$7,000.00

The major portion of this report period was spent in the collection and tagging of Dolly Varden and cutthroat trout. The work involved spawning observations of these two species, construction of weirs, periodic shocking of tributary streams, tagging and marking of fish and the use of fyke and gill nets in the lower river and Flathead Lake. A total of 98 cutthroat trout and 159 Dolly Varden were tagged and released.

F-7-R-5 1955 \$1,000.00

The work was limited to the experimental fishing use of a pirate trap in the lower Flathead River and in Flathead Lake. All personnel in the project were reassigned to give assistance on the Marias River rehabilitation during the work period.

F-7-R-6 1956. \$1,000.00

Four Dolly Varden and two cutthroat trout were tagged and released in the Middle Fork during the work season. Recapture information was received from 1 cutthroat and 22 Dolly Varden. Work was started on the construction of two pirate traps to be used in collecting fish in the lower river and the lake.

F-7-R-7 1957. \$7,000.00

Main emphasis was directed toward a study of the Middle Fork of the Flathead River. This was due to the anticipated construction of Spruce Park Dam. A two-way trap was constructed on the river just above the mouth of Bear Creek. A total of 209 Dolly Varden were tagged. They were captured by crews at the trap, through sampling streams with an electric shocker and by fishing while floating the river. Nine fish were recovered, of which four were caught in Flathead Lake. These four fish traveled from 96 to 117 miles. A total of 38 cutthroat trout were tagged and two were recovered within 600 yards of the place of tagging. Streams checks above the mouth of Bear Creek indicated that only native species persist (Dolly Varden, cutthroat trout and mountain whitefish).

F-7-R-8 1958. \$4,000.00

Three tributary streams were sampled by electrical shocking in the North Fork drainage. No adult cutthroat trout were captured. No reports were obtained from anglers on marked fish tagged in previous years. Two pirate traps were completed during the winter period.

F-7-R-9 1959. \$5,000.00

Attempts to obtain cutthroat trout from the Flathead River by gill nets and pirate trap sets for tagging were not successful. Two streams of the North Fork River drainage were sampled by electrical means. Fry were found and collected starting on

July 12 from 5 streams. Fishermen throughout the fishing season were contacted along the streams and the size, species, and spawning condition of the fish taken was recorded. Twenty-four cutthroat trout from the North Fork River were tagged with plastic jaw tags and released. Scale samples for age and growth analysis were collected.

F-7-R-10 1960. \$9,000.00

Information collected in 1959 was included into the basic life history information summarized in 1960. Spawners in the North Fork River were found from April through June. Resident spawners ranged from 6.3 to 10.1 inches and migrant spawners ranged from 12.0 to 19.3 inches; all were found in the small tributary streams. The average number of eggs by females was 1,482. Cutthroat trout embryos eyed in 38 to 49 days, hatched in 50 to 60 days and emerged from the gravel in 77 days. Cutthroat trout fry and fingerlings were found almost exclusively in the smaller tributary streams throughout the drainage. Most fry emerged in July. The average calculated length for 599 fish (from 1 to 6 years old) was as follows: 2.2, 4.7, 7.7, 11.3, 13.1, and 14.9. Tag returns were received on 13 of 175 cutthroat trout.

F-7-R-11 and 12 1961 and 1962. \$11,000.00 and \$10,000.00

These two work years were grouped together as the same general work was accomplished.

A crew of four men was employed to capture, tag and release Dolly Varden and cutthroat trout in the 171 miles of the Flathead River Drainage above Flathead Lake. Catch rate for tagged fish average 1.7 fish per hour per man (including float time). The average size of all cutthroat trout tagged was 9.0 inches, with a range from 7.0 to 16.5 inches. A total of 1,676 wild cutthroat trout and 297 Dolly Varden have been tagged and released in the river system.

Recapture information was received on a voluntary basis from 183 (10.9 percent) wild cutthroat trout and 33 (11.1 percent) Dolly Varden. Planting tagged brood cutthroat trout in the Middle Fork of the Flathead River yielded a 21.1 percent (103 of 487 fish) return to the anglers. Eighty percent of these fish were caught within three days and no fish were caught after two weeks from this plant.

#### 8. Summarize the practical application of the project.

Undoubtedly the most important application of the research work was the recognition of the dependent relationship that exists between Flathead Lake and its tributaries. This understanding is necessary before sound management recommendations can be made for the lake or its tributary streams. Findings dictated that these waters must be treated as "one" so as not to jeopardize this fisheries ecosystem.

Water quality investigations of the Flathead River drainage and Flathead Lake reveal it to be some of the purest waters found in the United States. In some areas the waters could be said to be triply distilled. These water quality findings indicate the necessity of working with "Mother Nature" in fish management, as she has developed fish that will reproduce and supply this river and lake system.

Man's activity in this area is increasing every year, whether it be dams, pollution, road-building or industry. We should be in a position to foresee the effects of these unnatural (as well as natural) changes to the fishery and act accordingly. Without the proper basic information we can only manage by trial and

error. In this modern civilization, history points out the contempt that the general public feels towards a program not based on facts.

Through research investigations, proper application of management and over-all supervision, the Fish and Game Commission and Department can justifiably feel that the maximum effort is being made in the preservation, maintenance and utilization of this river-lake fishery that is recognized as "unique" to all North America.